

## HI 38076 Zinc Test Kit with Checker Disc

**HANNA**  
instruments  
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Dear Customer,

Thank you for choosing a Hanna Product.

Please read the instruction sheet carefully before using the test kit. It will provide you with the necessary information for correct use of the kit. If you need additional information, do not hesitate to e-mail us at tech@hannainst.com.

Remove the chemical test kit from the packing material and examine it carefully to make sure that no damage has occurred during shipping. If there is any noticeable damage, notify your Dealer or the nearest Hanna office immediately.

Each kit is supplied with:

- HI 93731A-0 Reagent, packets (100 pcs);
- HI 93731B-0 Zinc Reagent B (Cyclohexanone), 1 bottle (100 mL);
- Demineralizer Bottle with filter cap for about 12 liters of deionized water (depending on the hardness level of water to be treated);
- 1 checker disc (containing the 38076 disc);
- 2 glass vials with caps;
- 1 long plastic pipette;
- 1 plastic pipette (3 mL);
- 1 syringe (1 mL) with tip.

**Note:** Any damaged or defective item must be returned in its original packing materials.

SPECIFICATIONS	
Range	0.0 to 4.0 mg/L (ppm) as Zinc 0.0 to 20.0 mg/L (ppm) as Zinc
Smallest Increment	0.1 mg/L [in the 0-4 mg/L range] 0.4 mg/L [in the 0-20 mg/L range]
Analysis Method	Colorimetric
Sample Size	7.5 mL and 1.5 mL
Number of Tests	100
Case Dimensions	235x175x115 mm (9.2x6.9x4.5")
Shipping Weight	647 g (22.8 oz.)

### SIGNIFICANCE AND USE

Zinc is widely used in alloys (brass, bronze and dye-casting alloys), in galvanizing iron and other metals and as a fungicide. Zinc is one of the elements that, though in small quantities, is indispensable for plants life. It is also an essential growth element in human diet. But in concentration higher than 5 mg/L, it gives a bitter taste to water and opalescence to alkaline water. Zinc can enter the domestic water supply from the deterioration of galvanized iron and dezincification of brass.

**Note:** mg/L is equivalent to ppm (parts per million).

### CHEMICAL REACTION

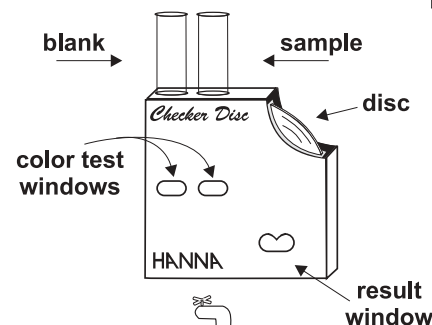
Zinc reacts with the zincon reagent to form a brownish-green complex in a solution buffered at alkaline pH. Since other metals can form colored complexes with zincon, cyanide is added to complex zinc and any other heavy metal present. Then, cyclohexanone is added to selectively free zinc from its cyanide complex so that it can react with zincon to form the final brown-violet colored product. The amount of color developed is proportional to the concentration of zinc present in the aqueous sample.

### INSTRUCTIONS

READ THE ENTIRE INSTRUCTIONS BEFORE USING THE KIT

- 1- Using the 3 mL plastic pipette, fill each of the two glass vials with 7.5 mL of sample (up to the mark).

- 2- Insert one of the vials into the left hand opening of the checker disc. This is the blank.



- 3- Remove the cap and fill the Demineralizer Bottle with tap water.

- 4- Replace the cap and shake gently for at least 2 minutes. The demineralized water is now ready.

- 5- Flip open the top of the Demineralizer Bottle cap. By gently squeezing the bottle, add demineralized water to the other vial up to the 20 mL mark. Replace the cap and shake to mix.

- 6- Remove the cap, add 1 packet of HI 93731A-0 reagent. Replace the cap and mix the solution until the powder has completely dissolved.

- 7- Using the long plastic pipette, remove 10 mL of the orange solution and dispose of it (the level of the remaining liquid in the vial has to correspond to the 10 mL mark).

- 8- Add 1 mL of HI 93731B-0 reagent to the vial, using the syringe.

**Note:** To measure exactly 1 mL of reagent with the syringe, push the plunger completely into the syringe and insert the tip into reagent bottle. Pull the plunger out until the lower edge of the seal is on the 0.0 mL mark of the syringe. Insert the syringe into the vial and push the reagent out until the lower edge of the seal is on the 1.0 mL mark.

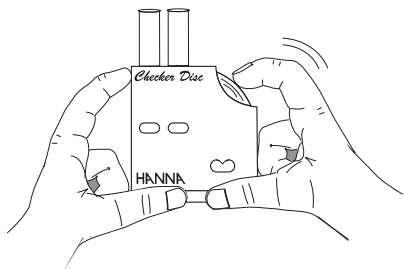
- 9- Replace the cap and mix for 15 seconds. Wait for 3 and a half minutes to allow color to develop. This is the reacted sample.

**Note:** the sample is turbid, but this thing does not affect the measurement.

- 10- Remove the cap and insert the reacted sample into the right hand opening of the checker disc.

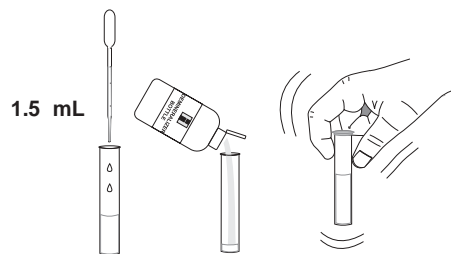
- 11- Hold the checker disc so that a light source illuminates the samples from the back of the windows. It is better to match the color with a background uniform and light in color (e.g. a white sheet) behind the checker disc.

- 12- Keep the checker disc at a distance of 30-40 cm (12-16") to match the color. Rotate the disc while looking at the color test windows and stop when you find the color match.



- 13- Read the value in the result window directly in mg/L (ppm) of Zinc.
- 14- If the color is too intense to make a color match, then the original sample needs to be diluted. In this case perform the test as follows.

- 15- Using the 3 mL plastic pipette, fill one glass vial with 1.5 mL of sample exactly and add demineralized water up to the 20 mL mark, replace the cap and swirl to mix.



- 16- Prepare the blank as before and insert it into the left hand opening of the checker disc. Follow the procedure from step 6 to step 12.
- 17- Multiply the reading value by 5 to obtain mg/L (ppm) of Zinc.
- 18- Discard the reacted sample after measurement, because the glass might become permanently stained.

**For best results:** Perform the reading three times and take the average value (divide by 3 the sum of the three numbers). Intensely colored samples will make the color matching determination difficult and they should be adequately treated before performing the test. Sus-

pended matter in large amounts should be removed by prior filtration.

**Caution:** Ultraviolet radiation may cause fading of colors. When not in use, keep the disc protected from light, in a cool and dry place.

## REFERENCES

*Standard Methods for the Examination of Water and Wastewater*, 18<sup>th</sup> Edition, 1992  
APHA/AWWA/WEF.

## HEALTH AND SAFETY

The chemicals contained in this kit may be hazardous if improperly handled. Read the relevant Health and Safety Data Sheet before performing this test.